

Amend claim 33 as follows:

33. (Amended) The [electrical connection] apparatus of claim 29 further comprising a film tape carrier removably coupled to the film, the film tape carrier operable to advance the film from a first position to a second position.

REMARKS

Priority was in fact claimed in the parent application as noted above. A request for a certificate of correction is being filed in the parent application, now a patent, to correct an obvious PTO error.

Claims 1, 2, 4, 6, 21 and 26 to 33 have been amended and allowable claim 23 has been rewritten in independent form. Claims 1, 2, 4, 6 and 21 to 33 remain active in this application. Please charge any costs to Deposit Account No. 20-0668.

Claims 2, 4, 6 and 26 to 33 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. These claims have been amended to overcome the rejection.

The objection to claims 21 and 29 has been remedied by amendment.

Claims 1, 2 and 26 were rejected under 35 U.S.C. 102(b) as being anticipated by Laakso et al. (U.S. 4,650,545). The rejection is respectfully traversed.

Claim 1 requires, among other features, a stepable substantially planar film. No such feature is taught or suggested by Laakso et al.

a plurality of spaced apart groups of wire strands, each wire strand of each group of wire strands having a first end and a second end, each wire strand of one of the groups of wire strands coupled to the film corresponding to the relative positions of the first component and the second component, the first end of each wire strand of the one of the groups of wire strands operable to

contact a first bonding site and the second end of each wire strand of the one of the groups of wire strands operable to contact a second bonding site to electrically interconnect the first component and the second component, at least a portion of each wire strand between the first end and the second end being fully embedded in said film. No such feature is taught or suggested by Laakso et al. either alone or in the combination as claimed. It should be noted that the process of Laakso et al. is incapable of fully embedding the conductors in the polyimide layer 14 whereas this feature is fully contemplated by the subject disclosure in the paragraph bridging pages 7 and 8.

Claim 2 depends from claim 1 and therefore defines patentably over Laakso et al. for at least the reasons set forth above with reference to claim 1.

In addition, claim 2 further limits claim 1 by requiring that the film comprise a plastic polymer. No such combination is taught or suggested by Laakso et al.

Claim 26 requires, among other features, a stepable wirefilm for electrically interconnecting bonding sites of said first component and said second component sites. No such feature is taught or suggested by Laakso et al.

Claim 26 further requires a plurality of spaced apart groups of wire strands, each wire strand of each group of wire strands having a first end and a second end, each wire strand of one of the groups of wire strands coupled to the film corresponding to the relative positions of the first component and the second component, the first end of each wire strand of each group of wire strands operable to contact a first bonding site and the second end of each wire strand of the one of the groups of wire strands operable to contact a second bonding site to electrically interconnect the first component and the second component, at least a portion of each wire strand between the first end and the second end being embedded in said film. No such feature is taught

or suggested by Laakso et al. either alone or in the combination as claimed. It should be noted that the process of Laakso et al. is incapable of fully embedding the conductors in the polyimide layer 14 whereas this feature is fully contemplated by the subject disclosure in the paragraph bridging pages 7 and 8.

Claims 21, 22, 29 and 30 were rejected under 35 U.S.C. 102(b) as being anticipated by Yamasaki et al. (U.S. 5,554,885). The rejection is respectfully traversed.

Claim 21 requires, among other features, a stepable substantially planar film. No such structure is taught or suggested by Yamasaki et al.

Claim 21 further requires a plurality of spaced apart groups of wire strands, each wire strand of each group of wire strands having a first end and a second end, each wire strand of one of the groups of wire strands coupled to the film corresponding to the relative positions of the first component and the second component, the first end of each wire strand of each group of wire strands operable to contact a first bonding site and the second end of each wire strand of the one of the groups of wire strands operable to contact a second bonding site to electrically interconnect the first component and the second component, each wire strand comprising a loop portion relaxed and located entirely between the first end and the second end, the loop portion spaced apart from said film. No such structure is taught or suggested by Yamasaki et al. Note that the resin 50 is an encapsulant. Accordingly, there is no stepable film in Yamasaki et al. and, it follows, there can be no loop portion spaced apart from the film.

Claim 22 depends from claim 21 and therefore defines patentably over Yamasaki et al. for at least the reasons presented above with respect to claim 21.

In addition, claim 22 further limits claim 21 by requiring that the film comprise a plastic polymer. No such combination is taught or suggested by Yamasaki et al.

Claim 29 requires, among other features, a stepable substantially planar film. No such structure is taught or suggested by Yamasaki et al.

Claim 29 further requires a plurality of spaced apart groups of wire strands, each wire strand of each group of wire strands having a first end and a second end, each wire strand of one of the groups of wire strands coupled to the film corresponding to the relative positions of the first component and the second component, the first end of each wire strand of the one of the groups of wire strands operable to contact a first bonding site and the second end of each wire strand of the one of the groups of wire strands operable to contact a second bonding site to electrically interconnect the first component and the second component, each wire strand comprising a loop portion relaxed and located entirely between the first end and the second end, the loop portion spaced apart from film. No such structure is taught or suggested by Yamasaki et al. Note that the resin 50 is an encapsulant. Accordingly, there is no stepable film in Yamasaki et al. and, it follows, there can be no loop portion spaced apart from the film.

Claim 30 depends from claim 29 and therefore defines patentably over Yamasaki et al. for at least the reasons presented above with reference to claim 29.

In addition, claim 30 further limits claim 29 by requiring that the film comprise a plastic polymer. No such combination is taught or suggested by Yamasaki et al.

Claims 4 and 27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Laakso et al. in view of Nakano et al. The rejection is respectfully traversed.

Claim 4 depends from claim 1 and claim 27 depends from claim 26. Since Nakano et al. fails to overcome the deficiencies noted above with reference to claims 1 and 26, these claims define over the combination of references for that reason alone, even assuming *arguendo* that the combination be proper.

Claims 4 and 27 further limit claims 1 and 26 by requiring an adhesive layer operable to couple the wirefilm to the first component and the second component. No such combination is taught or suggested by Laakso et al., Nakano et al. or any proper combination of these references. It should be noted that this is not a bonding step, but rather an adhesive step to maintain proper orientation of the wire strands prior to bonding as discussed in the specification at page 10, lines 29ff.

Claims 24 and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Yamasaki et al. in view of Nakano et al. The rejection is respectfully traversed.

Claim 24 depends from claim 21 and claim 32 depends from claim 29. Since Nakano et al. fails to overcome the deficiencies noted above with reference to claims 21 and 29, these claims define over the combination of references for that reason alone, even assuming *arguendo* that the combination be proper.

Claims 24 and 32 further limit claims 21 and 29 by requiring an adhesive layer operable to couple the wirefilm to the first component and the second component. No such combination is taught or suggested by Yamasaki et al., Nakano et al. or any proper combination of these references. It should be noted that this is not a bonding step, but rather an adhesive step to maintain proper orientation of the wire strands prior to bonding as discussed in the specification at page 10, lines 29ff.

Claims 6 and 28 were rejected under 35 U.S.C. 103(a) as being unpatentable over Laakso et al. in view of Ettre et al. (U.S. 3,655,496). The rejection is respectfully traversed.

Claim 6 depends from claim 1 and claim 28 depends from claim 26. Since Ettre et al. fails to overcome the deficiencies noted above with reference to claims 6 and 28, these claims

define over the combination of references for that reason alone, even assuming arguendo that the combination be proper.

Claims 6 and 28 further limit claim 1 and 26 by requiring a film tape carrier removably coupled to the film, the film tape carrier operable to advance the film from a first position to a second position. No such combination is taught or suggested by Laakso et al, Ettre et al. or any proper combination of these references.

Claims 25 and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Yamasaki et al. in view of Ettre et al. The rejection is respectfully traversed.

Claim 25 depends from claim 21 and claim 33 depends from claim 29. Since Ettre et al. fails to overcome the deficiencies noted above with reference to claims 21 and 29, these claims define over the combination of references for that reason alone, even assuming arguendo that the combination be proper.

In view of the above remarks and amendment, favorable reconsideration and allowance are respectfully requested.

Respectfully submitted,



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CROSS REFERENCE TO PRIOR APPLICATIONS

This application is a division of Serial No. 08/961,875, now Patent No. 6,006,981 which claimed priority based upon provisional application Serial No. 60/031,378, filed October 31, 1997.

1. A wirefilm for electrically interconnecting a first component having a plurality of first bonding sites and a second component having a plurality of second bonding sites, the wirefilm comprising:

a stepable substantially planar film; and

C² a plurality of spaced apart groups of wire strands, each wire strand of each group of wire strands having a first end and a second end, each wire strand of one of said groups of wire strands coupled to the film corresponding to the relative positions of the first component and the second component, the first end of each wire strand of said one of said groups of wire strands operable to contact a first bonding site and the second end of each wire strand of said one of said groups of wire strands operable to contact a second bonding site to electrically interconnect the first component and the second component, at least a portion of each wire strand between the first end and the second end being fully embedded in said film.

2. The wirefilm of Claim 1, wherein the film comprises a plastic polymer.

C³ 4. The wirefilm of Claim 1, further comprising an adhesive layer operable to couple the wirefilm to the first component and the second component.

C⁴ 6. The wirefilm of Claim 1, further comprising an film tape carrier removably coupled to the film, the film tape carrier operable to advance the film from a first position to a second position.

C⁵ 21. A wirefilm for electrically interconnecting a first component having a plurality of first bonding sites and a second component having a plurality of second bonding sites, the wirefilm comprising:

a steppable substantially planar film; and

C5
a plurality of spaced apart groups of wire strands, each wire strand of each group of wire strands having a first end and a second end, each wire strand of one of said groups of wire strands coupled to the film corresponding to the relative positions of the first component and the second component, the first end of each wire strand of each group of wire strands operable to contact a first bonding site and the second end of each wire strand of said one of said groups of wire strands operable to contact a second bonding site to electrically interconnect the first component and the second component, each wire strand comprising a loop portion relaxed and located entirely between the first end and the second end, the loop portion spaced apart from said film.

controlled
22. The wirefilm of claim 21 wherein the film comprises a plastic polymer.

N.E. 23. A wirefilm for electrically interconnecting a first component having a plurality of first bonding sites and a second component having a plurality of second bonding sites, the wirefilm comprising:

a substantially planarizable film; and

a plurality of wire strands, each wire strand having a first end and a second end, each wire strand coupled to the film according to the relative positions of the first component and the second component, the first end of each wire strand operable to contact a first bonding site and the second end of each wire strand operable to contact a second bonding site to electrically interconnect the first component and the second component, each wire strand comprising a loop portion relaxed and located entirely between the first end and the second end, the loop portion spaced apart from said film;

~~RR~~ ~~[The wirefilm of claim 21]~~ wherein at least a portion of each wire strand between the first end and the second end is embedded in said film.

24. The wirefilm of claim 21 further comprising an adhesive layer operable to couple the wirefilm to the first component and the second component.

25. The wirefilm of claim 21 further comprising a film tape carrier removably coupled to the film, the film tape carrier operable to advance the film from a first position to a second position.

CL 26. Apparatus for making an electrical connection between a first component and a second component with a wirefilm which comprises:

a first component having first bonding sites thereon;

a second component having second bonding sites thereon; and

a steppable wirefilm for electrically interconnecting bonding sites of said first component and said second component sites, the wirefilm comprising:

a substantially planar film; and

a plurality of spaced apart groups of wire strands, each wire strand of each group of wire strands having a first end and a second end, each wire strand of one of said groups of wire strands coupled to the film corresponding to the relative positions of the first component and the second component, the first end of each wire strand of each group of wire strands operable to contact a first bonding site and the second end of each wire strand of said one of said groups of wire strands operable to contact a second bonding site to electrically interconnect the first component and the second component, at least a portion of each wire strand between the first end and the second end being embedded in said film.

27. The apparatus of claim 26 further comprising an adhesive layer operable to couple the wirefilm to the first component and the second component.

28. The apparatus of claim 26 further comprising a film tape carrier removably coupled to the film, the film tape carrier operable to advance the film from a first position to a second position.

29. Apparatus for making an electrical connection between a first component and a second component with a wirefilm which comprises:

a first component having first bonding sites thereon;

a second component having second bonding sites thereon; and

a wirefilm for electrically interconnecting bonding sites of said first component and said second component sites, the wirefilm comprising:

a stepable substantially planar film; and

a plurality of spaced apart groups of wire strands, each wire strand of each group of wire strands having a first end and a second end, each wire strand of one of said groups of wire strands coupled to the film corresponding to the relative positions of the first component and the second component, the first end of each wire strand of said one of said groups of wire strands operable to contact a first bonding site and the second end of each wire strand of said one of said groups of wire strands operable to contact a second bonding site to electrically interconnect the first component and the second component, each wire strand comprising a loop portion relaxed and located entirely between the first end and the second end, the loop portion spaced apart from said film.

30. The apparatus of claim 29 wherein the film comprises a plastic polymer.

31. The apparatus of claim 29 wherein at least a portion of each wire strand between the first end and the second end is embedded in said film.

32. The apparatus of claim 29 further comprising an adhesive layer operable to couple the wirefilm to the first component and the second component.

33. The apparatus of claim 29 further comprising a film tape carrier removably coupled to the film, the film tape carrier operable to advance the film from a first position to a second position.
